UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/693,663	10/20/2000	Andrew Hilliard Arrowood	5577-214	8210

20792 7590 05/05/2004		EXAMINER
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RALEIGH, NC 27627	ART UNIT	PAPER NUMBER
	2157	10

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. ⚫	Applicant(s)
	09/693,663	ARROWOOD ET AL.
	Examiner	Art Unit
	LaShonda T. Jacobs	2157

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2000.*
2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-40* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date *4, and 6-9*.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities: Applicants' need to

provide the serial number of the related application.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on
> sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims **1-40** are rejected under 35 U.S.C. 102(b) as being anticipated by Choquier et al

(hereinafter, "Choquier", 5,774,668).

As per claims **1, 21** and **31**, Choquier discloses a method of distributing workload between

data processing systems executing an application which communicates over a network, the

method comprising:

- receiving a request for a connection to the application over the network (col. 7, lines 64-

   67, col. 8, lines 1-10, and col. 14, lines 6-11);

- obtaining workload information for the data processing systems (col. 10, lines 67-68,

   col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6);

- obtaining network quality of service information associated with communications over the network for respective ones of the data processing systems (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

- generating workload metrics associated with respective ones of the data processing systems utilizing the workload information and the corresponding network quality of service information for the data processing systems (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6); and

- distributing the requested connection to instances of the application executing on the data processing systems based on the generated workload metrics (col. 11, lines 30-43).

As per claims **2**, **22** and **32**, Choquier discloses:

- wherein the network quality of service information comprises at least one of network packet loss information, network timeout information, and number of connections information (col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claims **3**, **23** and **33**, Choquier discloses:

- wherein the workload information comprises a weight value (W) corresponding to a data processing systems processing capacity (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claims **4**, **17**, **24** and **34**, Choquier discloses:

- wherein the network quality of service information comprises a loss weight (F-loss) based on packet loss ratio, a network timeout weight (F-timeout=) based on a network timeout ratio and a connection weight (F-con) based on a number of active connections (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claims **5**, **25** and **35**, Choquier discloses:

- wherein F-loss is a ratio of retransmitted packets to total transmitted packets, wherein F-timeout is a ratio of number of timeouts to number of transmitted segments, and wherein F-con is a ratio of current connections to total allowed connections.

As per claims **6**, **19**, **26** and **36**, Choquier further discloses:

- determining a value for F-loss by mapping a TCP loss ratio to the value for F-loss (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6);

- determining a value for F-timeout by mapping a timeout loss ratio to the value for F-timeout (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6); and

- determining a value for F-con by determining if a number of current connections exceed a predefined percentage of a total number of allowed connections and setting F-con to 1 if the total number of connections exceeds the predefined percentage of the total number of allowed connections and to 0 if the total number of connections does not exceed the predefined percentage of the total number of allowed connections (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claims **7**, **18**, **20**, **27** and **37**, Choquier discloses wherein the step of generating workload metrics comprises the step of evaluating the equation:

- $Aw = (1 - MIN(1, \text{F-loss} + \text{F-timeout} + \text{F-con})) * W$ where Aw is the workload metric (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claims **8**, **28** and **38**, Choquier discloses:

- wherein the quality of service information comprises quality of service information for an instance of the application executing on one of the data processing systems (col. 11, lines 30-43).

As per claims **9, 29** and **39**, Choquier discloses wherein the quality of service information is divided into classes of quality of service information associated with the application based on a common constraint, the method further comprising the step of:

- determining a class of quality of service information associated with the connection request (col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6); and

- wherein the step of obtaining network quality of service information associated with communications over the network for the data processing systems comprises obtaining network quality of service information for the class of quality of service information associated with the connection request (col. 10, lines 66-67, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claims **10, 30** and **40**, Choquier discloses

- wherein the step of generating workload metrics comprises the step of combining the workload information and the corresponding network quality of service information for the data processing systems based on the class of quality of service information associated with the request so as to provide workload metrics based on the workload information, the quality of service information and the class of quality of service information associated with the request (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claim **11**, Choquier discloses:

- wherein the data processing systems comprise data processing systems in a Sysplex, wherein the steps of receiving a request for a connection to the application over the network, obtaining workload information for the data processing systems, obtaining network quality of service information associated with communications over the network for the data processing systems, generating workload metrics and distributing the requested connection to application instances on the data processing systems based on the workload metric are carried out by a routing communication protocol stack in the Sysplex (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claim **12**, Choquier discloses:

- wherein the routing communication protocol stack obtains the quality of service information from policy agents executing on the data processing systems in the Sysplex (col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6).

As per claim **13**, Choquier discloses a system for workload distribution, comprising:

- a workload distributor which selects data processing systems in a cluster of data processing systems for distribution of connections, based on quality of service information associated with the data processing systems and workload information associated with the data processing systems (col. 10, lines 34-67 and col. 11, lines 1-12); and

- a router (gateway) operably associated with the workload distributor which receives requests for connection to an application executing on ones of the data processing systems and distributes the connections to data processing systems in the cluster of

data processing systems selected by the workload distributor (col. 10, lines 34-67, col. 11, lines 1-12 and col. 13, lines 40-57).

As per claim **14**, Choquier discloses:

- wherein the router (gateway) comprises a routing communication protocol stack (col. 10, lines 34-67, col. 11, lines 1-12 and col. 13, lines 40-57).

As per claim **15**, Choquier discloses:

- wherein the requests for connections to the application comprise requests for connections to a dynamically routable virtual Internet Protocol address (col. 7, lines 64-67, col. 8, lines 1-10, and col. 14, lines 6-11).

As per claim **16**, Choquier discloses:

- policy agents associated with data processing systems which provide quality of service information to the workload distributor (col. 10, lines 34-67, col. 11, lines 1-12 and col. 13, lines 40-57).

Conclusion

4.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat. No. 6,119,174 to Borowsky et al

U.S. Pat. No. 5,774,660 to Brendel et al

U.S. Pat. No. 6,141,759 to Braddy

U.S. Pat. No. 6,223,205 to Harchol-Balter et al

U.S. Pat. No. 6,314,463 to Abbott et al

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to LaShonda T. Jacobs whose telephone number is 703-305-7494.
The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Ario Etienne can be reached on 703-308-7562. The fax phone number for the
organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent
Application Information Retrieval (PAIR) system. Status information for published applications
may be obtained from either Private PAIR or Public PAIR. Status information for unpublished
applications is available through Private PAIR only. For more information about the PAIR
system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR
system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LaShonda T. Jacobs
Examiner
Art Unit 2157

ltj
April 30, 2004

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